

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 25.

August, 1923.

No. 296.

GEORGE LINCOLN GOODALE.

L. H. BAILEY.

(With portrait.)

GEORGE LINCOLN GOODALE began life August 3, 1839 at Saco, Maine, and completed it April 12, 1923, at Cambridge, Massachusetts.

This bare statement may seem to signify little, but the life that was lived in those eighty-four years has great significance to a wide circle of associates and acquaintances and to the teaching of botany. To those who knew Dr. Goodale in his active teaching days at Harvard there remains a memory of a prompt, upstanding, positive, accomplishing character, master of his subject, unhesitating and convincing in his presentation of it. He succeeded to the teaching work of Asa Gray. It was a great career to follow. He continued the work without a personal departure and with rare loyalty at the same time that he gave it a particular direction.

Dr. Goodale's teaching naturally covered a wide range, but his was the special opportunity to present the enlarging subject of plant physiology as it was developed and understood by the best men of the day. He had good academic and scientific preparation. He had an acquisitive and analytic mind. He knew the necessary languages. He had personal acquaintance with the men and the laboratories in Europe. He brought this accumulation and experience to students in America in an authoritative way at a time when it was much needed. It was at length embodied in his *Physiological Botany*, 1885, comprising the second volume of Gray's projected "Botanical Text-Book," the third and fourth volumes of which, to be devoted to other subjects, were unhappily never completed.

One cannot go back to this text-book without being impressed by its thoroughness, the familiarity with the literature of the epoch as evidenced in the abundant citations, and by the logical, coherent, straightforward presentation. It stresses the chemical and physical relations of the subject. It is divided into two parts,—The Outlines of Vegetable Histology, and Vegetable Physiology, the second comprising about two-fifths of the treatment. It is a solid substantial book, that students of the present day would do well to understand.

But Dr. Goodale was interested not alone in precise laboratory studies. His "Wild Flowers of America," with colored plates from the drawings of Isaac Sprague, 1882, is still one of our choicest books for the plant-lover. Even as early as 1868 he had collaborated with Joseph Blake in the preparation of the "Portland Catalogue of Maine Plants." He was keenly interested in economic botany and in the practical improvement of useful and industrial plants, as well as in materia medica, to which his early studies and medical practice naturally led him. His presidential address before the American Association for the Advancement of Science at the Washington meeting, 1891, was on "Useful Plants of the Future." His interest in popular presentation of botanical subjects found expression also in the great Ware collection of Blaschka glass-models of plants in flower, which he was instrumental in securing and to the preparation of which he gave much personal attention, beginning as early as 1886; this unique collection is now one of the striking features of the Harvard Museums.

The breadth of his training and preparation is attested by the professional work in which he was engaged before he devoted himself to botany at Harvard. He practised medicine in Portland, Maine, 1863–66, having received M. D. from Bowdoin and Harvard in 1863; was state assayer of Maine, 1864; professor in natural science at Bowdoin, 1867–73, covering applied chemistry from 1868, and materia medica from 1870.

Dr. Goodale's active connection with Harvard began in 1872, as lecturer on vegetable physiology and instructor in botany. In 1873 he became assistant professor in vegetable physiology; in 1878 he was made full professor of botany; from 1879–1909 he was director of the botanic garden and curator of the botanical museum. From 1888 to 1909 he was Fisher Professor of Natural History at Harvard, the title previously held by Gray, and in 1909, on his retirement, was

made Fisher Professor Emeritus. In 1890–91 he visited Ceylon, Java, Straits Settlements, Australia, and Japan, adding greatly to his rich accumulation of botanical knowledge. His later years were lived quietly in Cambridge.

His work was well known outside of Harvard University. In 1890 he received the degree of LL.D. from Amherst College, where he had taken his baccalaureate degree in 1860 and from which he received A. M. in 1866; in 1894 from Bowdoin; in 1896 from Princeton. In 1889 he was vice-president of the Biological Section of the American Association for the Advancement of Science, and 1890–91 president of the Association. He was a fellow of the American Academy of Arts and Sciences, member of the American Philosophical Society, National Academy of Sciences; honorary fellow of the New York Academy of Sciences and of the Royal Society of New Zealand; at one time he was associate editor of the *American Journal of Science*, and was in attendance at the International Botanical Congress at Brussels in 1910; he held membership in the various botanical societies.

Dr. Goodale came of a distinguished father. Stephen Lincoln Goodale (1815–1897) succeeded to the drug business of his father, and early became interested in the chemical and botanical phases of pharmacy; this interest he extended to horticulture and crop-production, and he developed what was then the best growing collection of fruits and ornamental plants in Maine. From 1856–1872 he was secretary of the Maine State Board of Agriculture, editing sixteen volumes of reports which are well known to this day for their excellence. In 1861 he published "*The Principles of Breeding*," which is an able discussion of the physiological laws involved in the reproduction and improvement of domestic animals, and was long a leading presentation of the subject. He became interested in the manufacture and use of commercial fertilizers, and with Gail Borden started a factory as early as 1863 for the manufacture of condensed milk. He also was concerned in the manufacture of beef extract by the Liebig process. He was once a trustee of the State College of Agriculture and Mechanic Arts, now the University of Maine. His correspondence was extensive with scientific men in this country and abroad.

George Lincoln Goodale married Henrietta Juel Hobson in 1866, who survives him, as do his two sons, Dr. Joseph Lincoln Goodale, Boston, and Francis G. Goodale of Weston, Massachusetts, as well

as a brother, Dr. Walter Temple Goodale, Saco, Maine. The funeral services were held at St. John's Memorial Chapel, April 14, 1923, Dean Washburn of the Episcopal Theological School officiating. The pall-bearers were President Emeritus Charles W. Eliot, President A. Lawrence Lowell, Dr. Henry P. Walcott, Professor Oakes Ames, Edwin Abbott, Samuel Henshaw, Walter Deane, H. Clifford Gallagher, Dr. Robert T. Jackson, Professor W. J. V. Osterhout, Professor Roland Thaxter. The remains were taken to Saco, Maine, there at last to rest with the long family associations.

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY.

NEW SERIES.—No. LXIX.

A. BRACKETT.

I. REVISION OF THE AMERICAN SPECIES OF HYPOXIS.

THE genus *Hypoxis* occurs mostly in the southern hemisphere, extending into the northern hemisphere in subtropical Asia and by way of Mexico and the Antilles to the Atlantic slope of North America. All of our species have corms accompanied by somewhat fleshy root-fibers. They are herbs with grass-like, linear-lanceolate to nearly filiform and generally pilose leaves. The scapes are simple, one- to several-flowered. The peduncles are in general slightly pilose especially above, often glabrescent below. The pedicels are generally quite short; the bracts (when present) are setaceous and generally shorter than the pedicels. The ovary and capsule, commonly rather pilose when young, become nearly glabrous at maturity. The perianth-segments are narrowly elliptic, glabrous, yellow or white within, green and pilose without. The capsule is subglobose to subcylindric, generally three-lobed. The anthers of the American species are usually versatile but in one species, *H. sessilis* L., they are basi-fixed. The seeds are small, dark-colored, subglobose, muricate, bearing a beak and rostrate hilum.

In his *Synopsis of Hypoxidaceae*, Baker¹ recognized only three species of *Hypoxis* in all America, *H. juncea* Smith, *H. erecta* L. = *H. hirsuta* (L.) Coville and *H. decumbens* L. These were placed

¹J. G. Baker, Journ. Linn. Soc. xvii. 93-126 (1878).